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ABSTRACT

A study on the effect of viewing violence on television on childrens' behavior was conducted within the context of sport activity. Three sports--baseball, hockey, and lacrosse--were chosen. Teams of children from three different age groups were the subjects. Within each of the age levels in each sport, teams were selected and assigned to prosocial, antisocial, and control treatment conditions. Experimental television inputs were selected from available recordings of actual athletic events and edited to be relatively antisocial, prosocial, or neutral for the appropriate treatment groups. Observations of players' behavior included measures of physical, verbal, and nonverbal symbolic aggression, and prosocial behavior. The most notable finding was that exposure to prosocial media presentations appeared to consistently reinforce prosocial behavior on the part of the subjects. It is concluded that relationships that may exist between media aggression and viewer's aggression were not detected. Mean values for age and treatment conditions in each sport are presented in tabular form. (JD)

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A LABORATORY/FIELD STUDY OF TELEVISION VIOLENCE AND AGGRESSION IN CHILDREN'S SPORTS*

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Much concern has been expressed in recent years regarding the influence of television violence on the levels of aggression exhibited by both children and adults. While many studies have been undertaken in this area they have been plagued with methodological problems. Correlational studies of viewing habits and aggressiveness inevitably raise "chicken and egg" questions. Experimental studies, on the other hand, suffer from a host of other maladies. While recent studies have attempted to correct the problems, there are others that remain troublesome.

In an era when there is concern for the ecological validity of developmental psychology's findings, the artificiality of the experimental settings in which the measures of aggression are obtained is a problem. It is one thing to demonstrate that viewing a brief violent episode on a television monitor increases the frequency of sponge throwing or button pressing which will ostensibly injure another child and quite another to conclude that the child who throws more sponges will also throw more punches.

A nagging logical problem is also inherent in many of the investigations. Violence on television is a cause of concern for many because

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it is assumed that extended exposure to such violence will produce individuals who are more aggressive in the long term. Using conservative estimates the six year old child reaching the experimental situation has a viewing background of some 2,000 hours of television, much of it violent. The experimental manipulation generally involves exposure to an aggressive episode of from 3 to 15 minutes in length. If media violence has a long term or even an intermediate term effect on behaviour then we would expect this extensive viewing background to have an influence on the child's behaviour in the experimental setting which is at least as great as that of the brief experimental episode. What we do often see reported, however, is an extremely low level of aggression among control subjects and a large difference between this group and the experimental group. Such a situation leads one to conclude that the influence of media violence is only very fleeting.

There is a need then for an examination of the influence of television violence in a setting which is more natural, which permits more extended exposure, and which allows for more extended observation of behaviour.

A setting which meets just these criteria is children's organized sports. If there is any natural behaviour setting in which aggression is permissible and even encouraged it is on the playing field. Aggressive behaviour is not only allowable within the rules of many games (e.g., checking in hockey) but also quite acceptable as an accompaniment to games (e.g., shouting "Kill the umpire." in baseball). Children who

have become members of a team have made a commitment to continue playing for that team through a season and thus are available for reasonably extended study. There are other features of sports which contribute to making it an ideal setting for the study of the television violence question. Unlike a police shoot-out, a televised athletic event is highly similar to the setting in which the child operates. In addition, current television programming involves fairly extensive coverage of athletic events so that if, in fact, media violence increases levels of aggression it will be necessary to modify this type of programming.

In the present study children participating in one of three organized sporting activities were employed as subjects. It is best characterized as a series of three related studies since the age levels of the children varied somewhat across sports as did the intervals between treatments and observations. The sports selected were Hockey, Lacrosse, and Baseball. In all three sports, treatment and analysis were carried out by teams. Within each of the age levels in each sport, teams were randomly selected and assigned to pro-social, anti-social, or control treatment conditions. Experimental television inputs were selected from available recordings of actual athletic events and edited to be relatively anti-social, pro-social, or neutral for the appropriate treatment groups. Observations of players' behaviour included measures of physical, verbal, and non-verbal symbolic aggression, and pro-social behaviour.[1]

Hockey

Hockey players were attending a summer hockey school which players could attend for one week. Each player attended for five consecutive days from 9:00 a.m. to 4:00 p.m. Each of the three week long sessions was assigned to one of the three media treatment conditions. In the case of the control group, no TV inputs were provided. For the purposes of the school, children were divided into three age groups, 6-9 year olds, 10-13 year olds, and 14-17 year olds. Thus a 3 x 3 design was naturally available. Media inputs were provided on the second and third days of the school during the lunch hour. They were approximately 30 minutes in length on each of the two days. Observations of players' behaviour were made on the first, third, fourth, and fifth days.

Results indicate no significant differences in behaviour attributable to treatment effects for measures of physical or non-verbal symbolic aggression at any of the observation periods. Significant effects were found for verbal aggression and pro-social behaviour for the fifth day observations. In both cases the group assigned to the pro-social treatment showed highest levels of the behaviour followed by the control group and then the anti-social treatment group. While the verbal aggression firding may be spurious (the same direction of effect was not apparent during the earlier observation periods) the pro-social behaviour effect was also reflected during the previous two observation periods although they did not reach conventional levels of statistical significance. The only significant age effect was obtained during the third observational

period for pro-social behaviour during which the youngest group showed the highest level. This is also consistent with trends observed during the other observation periods.

Lacrosse

Lacrosse players were taking part in a summer minor lacrosse league which ran from mid-July through most of August. The league had three age divisions, 7-10 year olds, 11-14 year olds, and 15-20 year olds. Within each age level teams were assigned to pro-social and anti-social treatment conditions, and for the youngest group a control condition. Within each of the older groups two teams were assigned to the anti- and pro-social treatments, in the youngest group one team was assigned to each of the three treatments. Observations and experimental treatments took place over a six-week period. During the first week pre-treatment observations were made. During the second and third weeks experimental treatments were provided. Two video tapes each of approximately 30 minutes in length, for each of the treatment groups were shown, one tape each week. Observations of behaviour were also made during these weeks, at least one observation for each team after each of the media presentations. The final observations were carried out during the fourth and sixth weeks.

Results indicate no significant differences in behaviour attributable to experimental treatment. One significant age effect appeared. Older players were significantly more physically aggressive during the first two observation periods. A trend in this direction appears for the final observation but does not reach statistical significance. Considering the

findings for the hockey groups, a closer examination of pro-social behaviour seems warranted. During the third observation period, teams exposed to the pro-social treatment were more pro-social at all age levels than were the anti-social treatment groups. Regarding age differences, there was a fairly consistent tendency for older groups to be more pro-social than younger groups.

Baseball

Baseball players were participants in summer little league baseball. Two age divisions were selected for inclusion. Those in the younger group were 6-8 year olds and in the older group 11-12 year olds. (Attempts were made to include a sample of girls teams. Unfortunately, the girls failed to attend the treatment sessions and thus could not be studied). Observations and media presentations were carried out over a period of three weeks, pre-treatment observations during the first week, mid-treatment observations during the second week, and post-treatment observations during the third week. Media presentations were provided on Tuesday and Thursday of the second week, one before the second behaviour observation and one after. Video-tape presentations were each approximately 30 minutes in length.

One significant treatment effect appeared for the non-verbal symbolic aggression measure with the pro-social treatment group showing the highest level of the behaviour. This order, however, was not particularly consistent over age and observation periods. Two fairly consistent trends may be noted. Older teams exposed to pro-social media

presentations tended to behave more pro-socially over-all, than did anti-social treatment groups[2] and also tended to be more verbally aggressive than anti-social treatment teams. Several age effects emerged among the baseball teams. These differences all reach conventional levels of significance during at least one observation period and show consistency throughout the data. The younger group showed higher levels of physical aggression while the older group showed higher levels of verbal and non-verbal symbolic aggression and pro-social behaviour.

Considering the data overall, the most notable finding is that exposure to pro-social media presentations does appear to be related to pro-social behaviour. This relationship emerges consistently through an otherwise somewhat bewildering array of data. It must be emphasized that we are discussing fairly long term influences. The positive effect of pro-social media presentation was present for the hockey group 24 hours after the media presentation and at least a tendency in this direction is present as long as a week later for some children in baseball and as long as one to three weeks for lacrosse players.

Regarding the non-finding of relationships among anti-social media presentations and measures of aggression, several cautions are in order. We were looking at long term effects and did not attempt to test for immediate effects of med-a exposure on behaviour and thus cannot comment on such a potential relationship. We could not control such factors as children's television viewing between our media presentations and the

observation of behaviour or events which occurred during the games (e.g., number of goals or runs scored, crucial penalties or strike outs). Multiple interactions among these and other extraneous variables and behaviour are possible and probable. Our data reveal high variation among mean values for most behaviours even though considerable effort was exerted to arrive at stable estimates.[3] The most that can be said is that relationships which may exist between media aggression and viewer's aggression were not detected in this study.

NOTES

1. Operational Definitions for Behaviour Observation

Physical Aggression

Touching, by parts of the body or equipment, of another person that appears to demean, intimidate, threaten or harm that person.

Verbal Aggression

Audible speech directed toward self or others that demeans, intimidates or threatens that person or group.

Non-Verbal Aggression

Any non-verbal behaviour, excluding physical contact, directed toward others that appears intended to demean, intimidate or threaten that person or group.

Pro-Social Behaviour

Any act, verbal or non-verbal, directed toward others that appears intended to encourage, console, or otherwise enhance the well-being of that person or group.

2. Baseball teams assigned to pro-social treatment show higher levels of pro-social behaviour before treatment. This is unfortunate for the purposes of the experiment but occasionally happens with random assignment to experimental treatment. The difference between the pro-social and anti-social groups increases, however, over the long term.

3. Data were originally recorded by inning for baseball teams, by game period for lacrosse teams, and by 20 minute period for hockey

groups. The number of incidents of each behaviour were then averaged over these recording periods. For the lacrosse and baseball teams this yielded mean valued of the behaviours for each game for each team. These values were then averaged over games for each team and the resulting values used for the analysis. Values appearing in the table are a further average over teams assigned to the treatment. Since for the hockey groups, the number of players varied somewhat over the three weeks and activities were sometimes shorter than 20 minutes, the following correction factor was applied to the data:

$$\frac{100}{\text{no. of players x no. of minutes}}$$

Tables values are the result of these manipulations and are the data used for the analyses.

Mean Values for Age and Treatment Conditions
Physical Aggression - Hockey

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	8.05	6.75	7.02	7.27
Middle (10-13)	2.80	13.52	3.20	6.51
Older (14-17)	2.24	6.29	2.31	3.61
Col. Means	4.36	8.85	4.18	

Mid-treatment I

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	48.99	59.00	17.68	41.89
Middle (10-13)	53.90	20.30	5.72	26.64
Older (14-17)	18.49	26.01	10.40	18.30
Col. Means	40.46	35.10	11.27	

Mid-treatment II

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	29.04	34.77	30.60	31.47
Middle (10-13)	43.26	31.68	18.81	31.25
Older (14-17)	25.41	25.20	3.64	18.08
Col. Means	32.57	30.55	17.68	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	57.04	73.59	58.00	62.88
Middle (10-13)	42.60	43.25	84.00	56.62
Older (14-17)	65.50	36.12	83.88	61.83
Col. Means	55.05	50.99	75.29	

Mean Values for Age and Treatment Conditions
Non-Verbal Aggression - Hockey

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	.70	.90	2.60	1.40
Middle (10-13)	.14	1.04	.10	.43
Older (14-17)	.64	1.02	.44	.70
Col. Means	.49	.99	1.05	

Mid-treatment I

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	4.14	.59	.85	1.86
Middle (10-13)	2.10	.35	1.30	1.25
Older (14-17)	.86	1.02	1.60	1.16
Col. Means	1.08	.64	1.25	

Mid-treatment II

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	1.56	2.28	1.62	1.82
Middle (10-13)	1.25	1.32	.88	1.15
Older (14-17)	1.32	3.84	1.17	2.11
Col. Means	1.38	2.48	1.22	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	.92	1.32	.80	1.01
Middle (10-13)	1.80	.75	1.05	1.20
Older (14-17)	2.00	.84	1.44	1.43
Col. Means	1.57	.97	1.10	

Mean Values for Age and Treatment
Conditions Verbal Aggression - Hockey

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	6.30	0	.13	2.14
Middle (10-13)	.32	.52	.20	.35
Older (14-17)	.16	0	0	.05
Col. Means	2.26	.17	.11	

Mid-treatment I

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	5.52	1.77	.51	2.60
Middle (10-13)	.70	.35	1.04	.70
Older (14-17)	0	1.02	.20	.41
Col. Means	2.07	1.05	.58	

Mid-treatment II

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	2.08	.59	.54	1.07
Middle (10-13)	0	.99	.77	.59
Older (14-17)	.33	1.20	.39	.64
Col. Means	.80	.93	.57	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	2.30	.33	1.60	1.41
Middle (10-13)	3.30	0	.70	1.33
Older (14-17)	1.75	.63	.72	1.03
Col. Means	2.45	.32	1.01	

Mean Values for Age and Treatment Conditions
Pro-Social Behaviour - Hockey

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	1.40	.90	1.43	1.24
Middle (10-13)	.98	1.04	.20	.74
Older (14-17)	.48	.68	.22	.46
Col. Means	.95	.87	.62	

Mid-treatment I

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	6.90	11.21	.51	6.21
Middle (10-13)	4.90	.35	.65	1.97
Older (14-17)	2.15	0	.20	.78
Col. Means	4.65	3.85	.45	

Mid-treatment II

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	9.36	6.27	5.94	7.19
Middle (10-13)	2.10	3.63	.99	2.24
Older (14-17)	1.32	1.44	.13	.96
Col. Means	4.26	3.78	2.35	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-9)	11.96	8.25	8.40	9.54
Middle (10-13)	12.30	7.25	8.40	9.32
Older (14-17)	11.00	2.10	7.20	6.77
Col. Means	11.75	5.87	8.00	

Mean Values for Age and Treatment Conditions
Physical Aggression - Lacrosse

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7 10)	29.10	41.40	40.10	36.37
Middle (11-14)	42.59	48.95		45.77
Older (15-20)	52.18	54.89		53.54
Col. Means	41.29	48.41	40.10	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	31.10	30.40	28.20	29.90
Middle (11-14)	39.15	35.48		37.32
Older (15-20)	40.97	39.38		40.18
Col. Means	37.07	35.09	28.20	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	27.35	35.60	32.80	31.92
Middle (11-14)	39.19	30.34		34.77
Older (15-20)	32.00	39.95		35.98
Col. Means	32.85	35.30	32.80	

Mean Values for Age and Treatment Conditions
Non-Verbal Aggression - Lacrosse

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	.75	.80	.85	.80
Middle (11-14)	.65	1.89	0	1.27
Older (15-20)	1.02	1.07	0	1.05
Col. Means	.31	1.25	.85	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	1.70	1.35	2.20	1.75
Middle (11-14)	2.93	4.43	0	3.68
Older (15-20)	2.22	3.00	0	2.61
Col. Means	2.28	2.93	2.20	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	3.45	2.40	2.76	2.87
Middle (11-14)	1.82	1.83	0	1.83
Older (15-20)	1.20	1.50	0	1.35
Col. Means	2.16	1.91	2.76	

Mean Values for Age and Treatment Conditions
Verbal Aggression - Lacrosse

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	1.65	.45	1.00	1.03
Middle (11-14)	1.04	1.98		1.51
Older (15-20)	3.82	3.51		3.67
Col. Means	2.17	1.98	1.00	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	.80	.30	.60	.57
Middle (11-14)	.33	2.00		1.17
Older (15-20)	1.55	4.08		2.82
Col. Means	.89	2.13	.60	

Post-treatment

	Pro-Social	Anti-Social	Control	Row
Younger (7-10)	1.05	.45	.65	.72
Middle (11-14)	.85	1.36		1.11
Older (15-20)	.85	.70		.78
Col. Means	.92	.84	.65	

Mean Values for Age and Treatment Conditions
Pro-Social Behaviour - Lacrosse

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	9.60	2.40	3.50	5.17
Middle (11-14)	4.79	8.27		6.53
Older (15-20)	7.28	6.95		7.12
Col. Means	7.22	5.87	3.50	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	5.80	4.45	3.30	4.52
Middle (11-14)	4.00	4.65		4.33
Older (15-20)	3.57	6.90		5.24
Col. Means	4.46	5.33	3.30	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (7-10)	3.85	1.95	5.60	3.80
Middle (11-14)	5.23	4.90		5.07
Older (15-20)	7.00	3.95		5.48
Col. Means	5.36	3.60	5.60	

Mean Values for Age and Treatment Conditions
Physical Aggression - Baseball

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	1.20	3.60		2.40
Older (11-12)	.20	.90	1.40	.83
Col. Means	.70	2.25	1.40	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	1.80	1.00		1.40
Older (11-12)	.23	.48	.85	.52
Col. Means	1.01	.74	.85	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	.60	.80		.70
Older (11-12)	.62	.55	.20	.46
Col. Means	.61	.68	.20	

Mean Values for Ages and Treatment Conditions
Non-Verbal Aggression - Baseball

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	3.60	.50		2.05
Older (11-12)	2.20	2.80	1.40	2.13
Col. Means	2.90	1.65	1.40	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	.40	1.00		.70
Older (11-12)	1.40	1.70	.90	1.33
Col. Means	.90	1.35	.90	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	.45	.15		.30
Older (11-12)	2.05	1.20	.25	1.17
Col. Means	1.25	.68	.25	

Mean Values for Ages and Treatment Conditions
Verbal Aggression - Baseball

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (5-8)	.65	1.50		1.08
Older (11-12)	2.60	2.60	6.15	3.78
Col. Means	1.63	2.05	6.15	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	1.80	1.10		1.45
Older (11-12)	5.58	2.70	3.45	3.91
Col. Means	3.69	1.90	3.45	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	.25	3.25		1.75
Older (11-12)	6.13	1.90	4.40	4.14
Col. Means	3.19	2.58	4.40	

Mean Values for Ages and Treatment Conditions
Pro-Social Behaviour - Baseball

Pre-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	20.20	6.90		13.55
Older (11-12)	29.95	18.10	18.55	22.20
Col. Means	25.08	12.50	18.55	

Mid-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	7.10	4.00		5.55
Older (11-12)	21.53	14.65	13.95	16.71
Col. Means	14.32	9.33	13.95	

Post-treatment

	Pro-Social	Anti-Social	Control	Row Mean
Younger (6-8)	7.85	11.10		9.48
Older (11-12)	41.35	10.73	22.23	24.77
Col. Means	24.60	10.92	22.23	